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Book Reviews

C. S. HSU, *Cell-to-Cell Mapping*, Springer, 1987, 352 pp.

What has happened is that some very old notions on dynamical systems, going back to Poincaré and G. D. Birkhoff, have recently been brushed off the shelves and resold to an unsuspecting public as if they were the *dernier cri*. Such a selling technique is not rare in mathematics (the reviewer himself admits to having rewritten some of his own twenty-year-old papers in a new notation, in a vain attempt to get someone to read them). It stands to reason that a balanced and historical minded author should set the record straight and show what is old and what is new, what the old guys had succeeded in doing, and what (little) the new guys have contributed. A serious book, for a change.

S. P. GUDDER, *Quantum Probability*, Academic Press, 1988, 316 pp.

The Feynman integral, one of the most useful ideas in physics, still stands as a challenge to mathematicians. While formally similar to Brownian motion, and while admitting some of the same manipulations as the ones that have been made rigorous long ago for Brownian motion, it has withstood all attempts at rigorization. Behind the Feynman integral there lurks an even more enticing (and even less rigorized) concept: that of an amplitude, which, roughly speaking, is meant to be the quantum-mechanical analog of probability (in fact, one gets probabilities by taking the absolute values of amplitudes and squaring them: hence the slogan "quantum mechanics is the imaginary square root of probability theory"). It stands to reason that a concept similar to that of a sample space should be made to exist for amplitudes, and that quantum mechanics should be developed starting from this concept. This is the author's program in this ambitious and well-written book (probably too well-written mathematically to be read by physicists, to their detriment); with what degree of success is a question that we hope to discuss in a separate publication. Suffice it to say that this is probably the most serious book to date on the foundations of quantum mechanics.

J.-Y. GIRARD, Y. LAFONT, AND P. TAYLOR, *Proofs and Types*, Cambridge Univ. Press, 1989, 176 pp.

This is the prime exposition of the background material to what is probably the most exciting development in logic of recent years: the linear logic invented by Girard. In a leisurely exposition starting from the classical theory of natural deduction, the reader is brought all the way to seeing the inevitability of linear logic. Not unexpectedly, the book is published in a computer science series: that is where one should look for interesting logic books these days (if you look for logic books in a logic series, you are likely to find cardinals so large you can't even see them.)

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